Microsoft

Multi-Touch Interaction using Dynamic Chord Gestures

Jianqiao Li Columbia University and Inria
Wendy Mackay Inria
Steve Feiner Columbia University

Microsoft Research
Faculty Summit
2015
July 8-9, 2015

Problem

- Large applications with many commands
- Users want to concentrate on tasks, not tools

Opportunity

- Multi-touch displays becoming ubiquitous

Approach

- Chords
  - \+ Take advantage of multi-touch input
  - \+ Efficient parallelism
  - – **Difficult to learn**

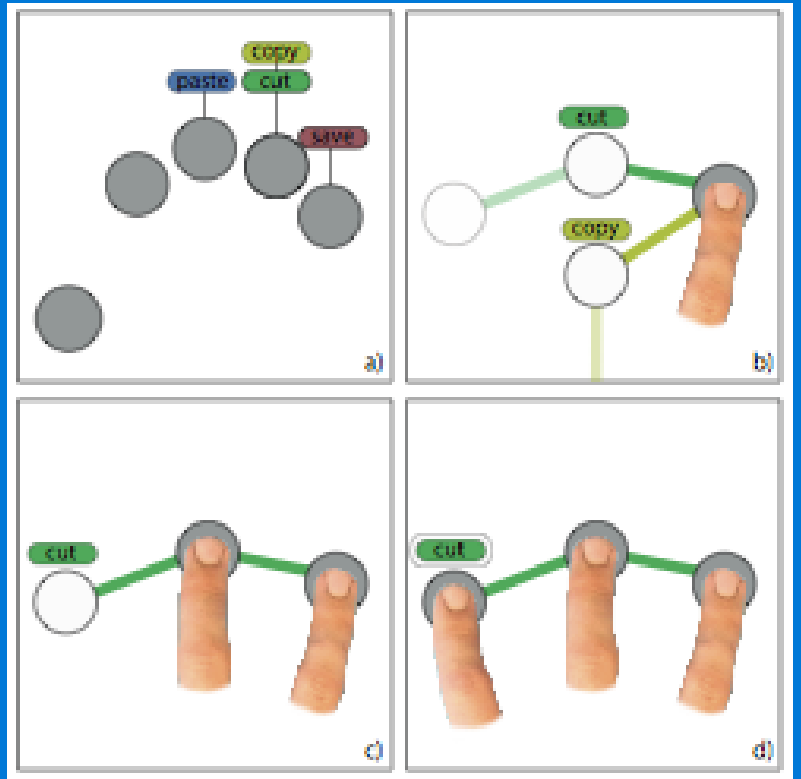
Previous Work

- NLS — D Engelbart et al., 1968
  - Chord keysets
- Marking menus — G Kurtenbach & B Buxton, 1993
  - Dynamic feedforward/feedback for single-touch menus
- Chord menus
  - G Lepinksi et al., Multitouch marking menus, *ACM CHI 2010*
  - OKC Au & CL Tai, Multitouch finger registration, *OZCHI 2010*

  …

Previous Work

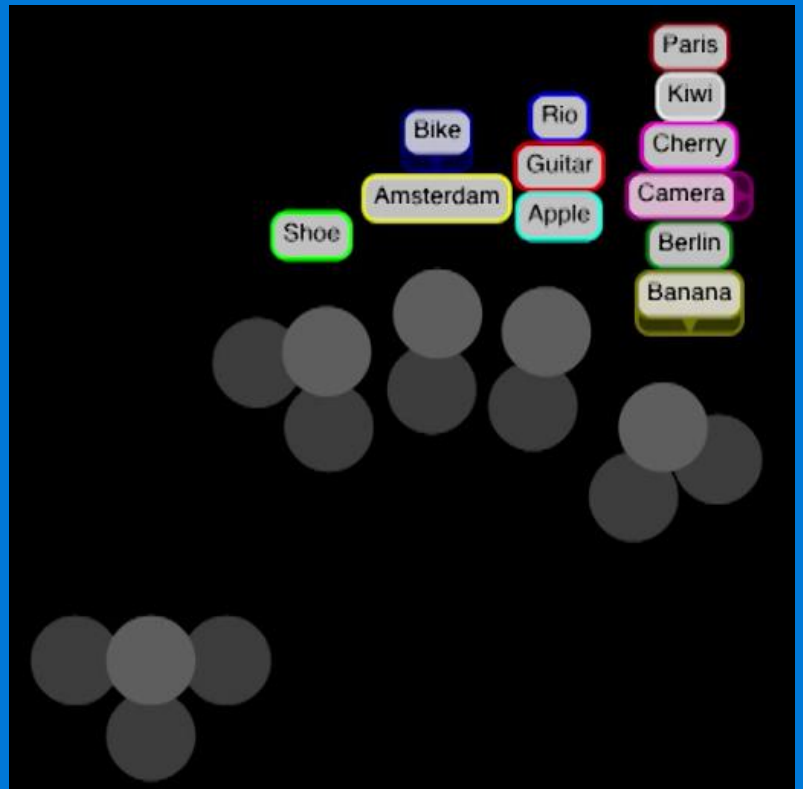
- Arpège — E. Ghomi et al., *ACM ITS 2013*
  - Progressive feedforward to learn chords in context
    - One finger at a time



Microsoft

Previous Work

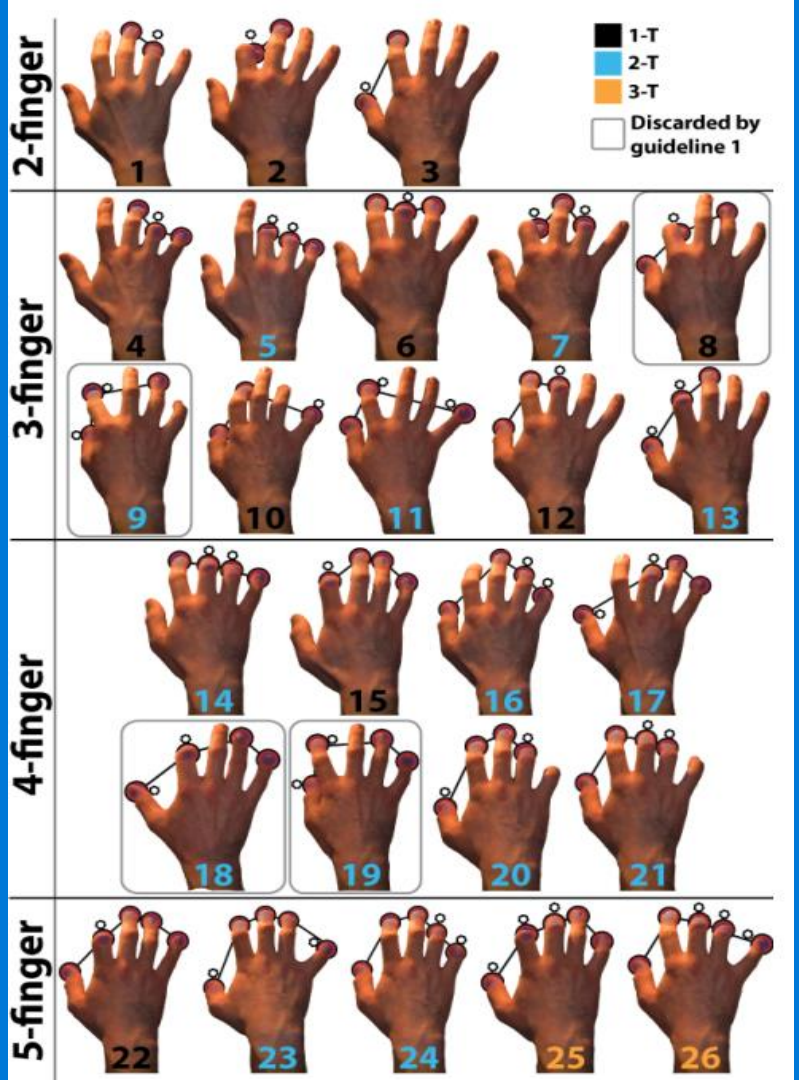
- Arpège — E. Ghomi et al., *ACM ITS 2013*
  - Progressive feedforward to learn chords in context
    - One finger at a time
  - Novices pause to get help, experts "just do it"



Microsoft

Previous Work

- Arpège — E. Ghomi et al., *ACM ITS 2013*
  - Progressive feedforward to learn chords in context
    - One finger at a time
  - Novices pause to get help, experts "just do it"
  - Large potential chord vocabulary

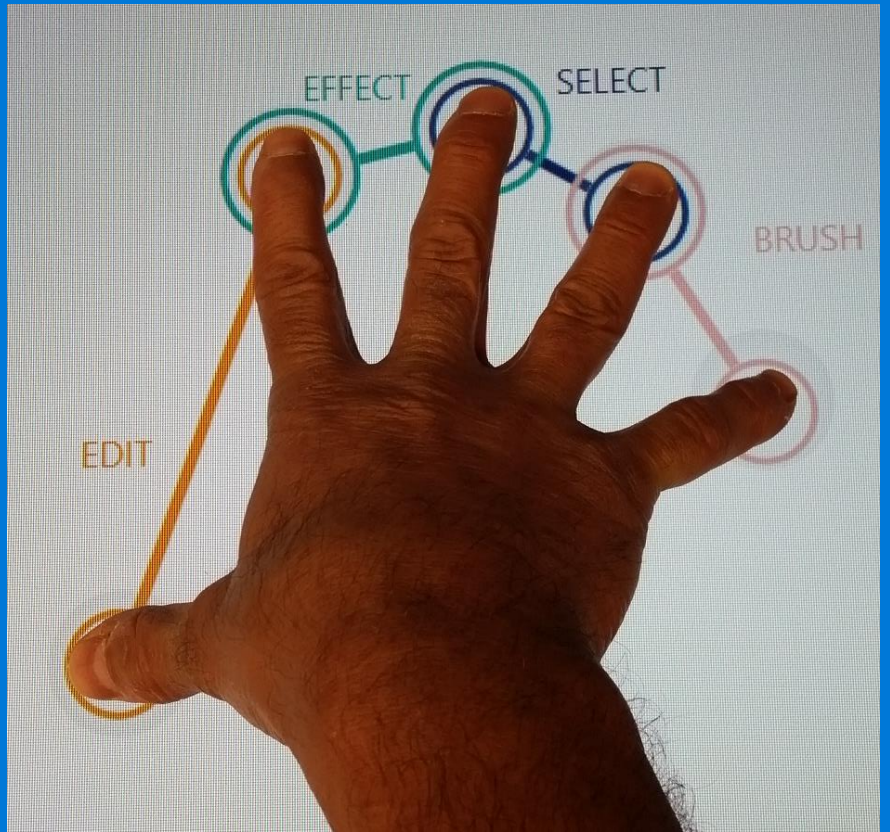


Microsoft

DynaChord

Hierarchical chords

- Top level reveals categories



Microsoft

DynaChord

Hierarchical chords

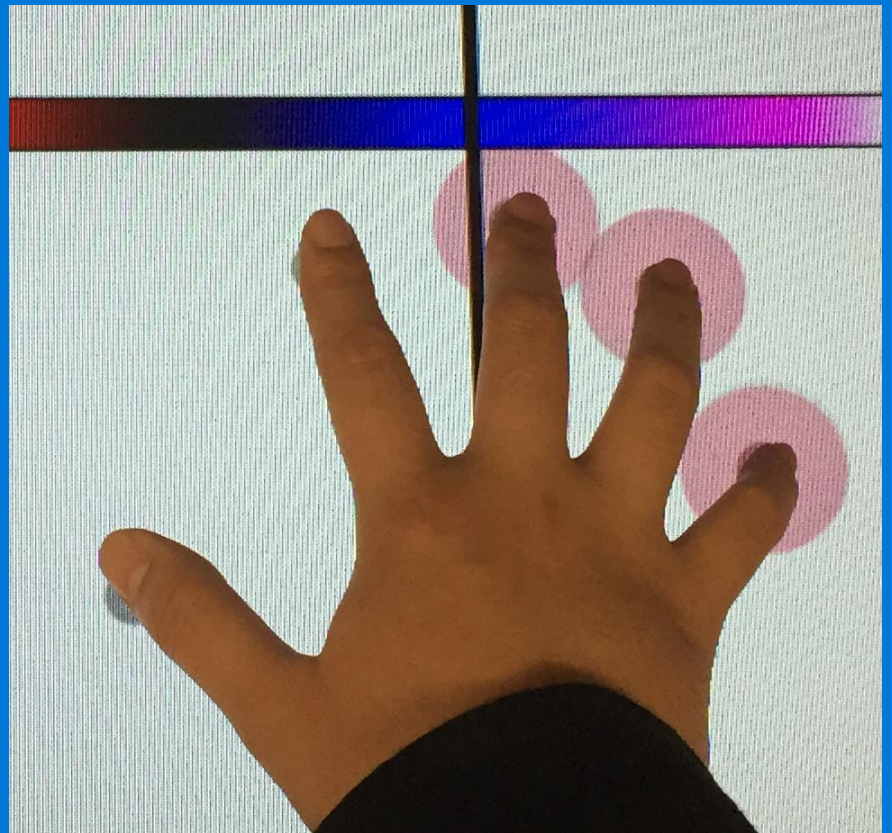
- Top level reveals categories
- Subsequent levels reveal tools

Microsoft

DynaChord

Continuous gestures

- Dynamic gestures for continuous interaction
  - **Changing parameters**



Microsoft

DynaChord Demo